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10/668,634	09/23/2003	David Stevenson Spain	465-009US	2179

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EXAMINER	
SHEDRICK, CHARLES TERRELL	
ART UNIT	PAPER NUMBER
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/668,634	SPAIN, DAVID STEVENSON	
	Examiner	Art Unit	
	Charles Shedrick	2617	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *18 July 2007*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-28* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-28* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments filed7/18/07 have been fully considered but they are not persuasive.

According to the Applicant Specification One way of acquiring an additional signal-strength measurement is to actually physically measure a signal at the wireless terminal, but most legacy terminals are not equipped to measure and report on an arbitrary number of signals.(paragraph 0020) paragraph 0021 admits that Another way of acquiring a "signal-strength measurement" is by inference or deduction based on other information, and this is what the illustrative embodiment does.

The signal strength of the Base station's control channel can be deduced from the strength at which the control channel signal at the wireless terminal R_D can be deduced from the strength at which the control channel signal is transmitted by the Base station T_D, and the attenuation of that signal between the base station and the wireless terminal A_D i.e., $R_D = T_D - A_D$ where $A_D = A_U$, $A_U = T_U - A_U$ now by substitution $R_D = T_D - (T_U - A_U)$ → here we note that $T_U - A_U$ is essentially the path loss. The value R_D is then used to estimate the location.

So, Basically based on the transmit power and the path loss, R_D is calculated (e.g., deduced or inferred).

The Claim language states a method used to deduce the signal received at a wireless terminal based on the path loss or attenuation. Although the claim language states deducing, one can clearly see that the deduction is based on an algebraic manipulation where the received strength is dependent upon some factor of attenuation or an additional signal.

Rotstein teaches in at least paragraph 0029 –0049 several ways to deduce or calculate a first signal that's based on a second or more signals which also includes the attenuation. And although the attenuation is being deduced it still reads on the fact that a first signal can be deduced based on a second or more signals. The Applicants specification clearly show that the claimed deduction is based on a number of known and unknown variables within a given equation. One of ordinary skill in the art could deduce any unknown variable based on the known variables. In paragraph 0017 the prior art teaches that the MS deduces the "link path loss" and calculates at least on optimal transmission parameter, however, one of ordinary skill in the art would note that the deduction is based on an algebraic calculation as shown in paragraph 0049. Clearly one of ordinary skill in the art could deduce any one of the factors given the missing factors. Furthermore, the prior art clearly shows that the factors involved in the deduction are the necessary factors involved in the transmission (transmit power, receive power, and path loss) which are identical to the factors shown in the reciprocal equation disclosed by the Applicant. Therefore, the rejection is maintained as proper.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 1-4,6-7, 10-13, 15-16,20-23, and 25-26 rejected under 35 U.S.C. 103(a) as being unpatentable over Rotstein et al. US Patent Pub. No.: 2004/0057507, hereinafter, 'Rotstein' in view of Chen et al., hereinafter, 'Chen', US Patent No. 6,658,258 B1

Consider **claim 1**, Rotstein teaches a method of deducing a signal strength of a first signal at a wireless terminal based on the transmit strength of a second signal, that is transmitted by said wireless terminal (e.g., paragraphs 0017,0020 0029-0050, figure 4).

However, Rotstein does not specifically teach estimating the location of said wireless terminal based on a signal strength of a first signal.

In analogous art, Chen teach estimating the location of said wireless terminal based on a signal strength of a first signal (abstract, col. 2 lines 14-25, col. 7 line 34-col. 8 line 35 and claims 1 and 12).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify Rotstein to include estimating the location of said wireless terminal based on said signal strength of said first signal for the purpose of estimating the location of a mobile terminal using improved link estimations.

Consider **claim 2,** and **as applied to claim 1 above,** Rotstein as modified Chen teaches a method wherein deducing said signal strength of said first signal is also based on the transmitted strength of said first signal (e.g., paragraphs 0017,0020 0029-0050, figure 4).

Consider **claim 3,** and **as applied to claim 1 above,** Rotstein as modified Chen teaches a method wherein deducing said signal strength of said first signal is also based on a signal-strength measurement for said second signal at the location where said first signal is transmitted (e.g., paragraphs 0017,0020 0029-0050, figure 4).

Consider **claim 4,** and **as applied to claim 1 above**, Rotstein as modified by Chen teaches a method wherein deducing the said signal strength of said first signal, is also based on an attenuation for said second signal between wireless terminal and the location where said first signal is transmitted (abstract, col. 2 lines 14-25, col. 7 line 34-col. 8 line 35 and claims 1 and 12).

Consider **claim 6**, and **as applied to claim 1 above**, Rotstein teaches a method wherein estimating the link of said wireless terminal is also based on a signal strength measurement of a third signal (e.g., paragraphs 0017,0020 0029-0050, figure 4).

However, Rotstein does not specifically teach estimating the location of said wireless terminal.

In analogous art, Chen teaches estimating the location of said wireless terminal (abstract, col. 2 lines 14-25, col. 7 line 34-col. 8 line 35 and claims 1 and 12).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify Rotstein to include estimating the location of said wireless

terminal for the purpose of estimating the location of a mobile terminal using improved link estimations.

Consider **claim 7**, and **as applied to claim 6 above**, Rotstein teaches a method wherein estimating the link of said wireless terminal is based on said signal strength of said first signal and said signal strength measurement of said third signal (e.g., paragraphs 0017,0020 0029-0050, figure 4).

However, Rotstein does not specifically teach estimating the location of said wireless terminal.

In analogous art, Chen teaches estimating the location of said wireless terminal (abstract, col. 2 lines 14-25, col. 7 line 34-col. 8 line 35 and claims 1 and 12).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify Rotstein to include estimating the location of said wireless terminal for the purpose of estimating the location of a mobile terminal using improved link estimations.

Consider **claim 10,** Rotstein teaches a method wherein deducing said signal strength of said first signal based on a signal-strength measurement of a second signal at the location where said first signal is transmitted (e.g., paragraphs 0017,0020 0029-0050, figure 4).

However, Rotstein does not specifically teach estimating the location of said wireless terminal based on a signal strength of a first signal.

In analogous art, Chen teach estimating the location of said wireless terminal based on a signal strength of a first signal (abstract, col. 2 lines 14-25, col. 7 line 34-col. 8 line 35 and claims 1 and 12).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify Rotstein to include estimating the location of said wireless terminal based on said signal strength of said first signal for the purpose of estimating the location of a mobile terminal using improved link estimations.

Consider **claim 11,** and **as applied to claim 10 above,** Rotstein as modified by Chen teaches a method wherein deducing said signal strength of said first signal is also based on the transmitted strength (e.g., paragraphs 0017,0020 0029-0050, figure 4).

Consider **claim 12** and **as applied to claim 10 above**, Rotstein as modified by Chen teaches a method of deducing a signal strength of a first signal at a wireless terminal based on the transmit strength of a second signal (e.g., paragraphs 0017,0020 0029-0050, figure 4), that is transmitted by said wireless terminal (e.g., paragraphs 0017,0020 0029-0050, figure 4).

Consider **claim 13,** and **as applied to claim 10 above**, Rotstein as modified by Chen teaches a method wherein deducing the said signal strength of said first signal, is also based on an attenuation (e.g., paragraphs 0017,0020 0029-0050, figure 4)

Consider **claim 15**, and **as applied to claim 10 above**, Rotstein teaches a method wherein estimating the link of said wireless terminal is also based on a signal strength measurement of a third signal (e.g., paragraphs 0017,0020 0029-0050, figure 4).

However, Rotstein does not specifically teach estimating the location of said wireless terminal.

In analogous art, Chen teaches estimating the location of said wireless terminal (abstract, col. 2 lines 14-25, col. 7 line 34-col. 8 line 35 and claims 1 and 12).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify Rotstein to include estimating the location of said wireless terminal for the purpose of estimating the location of a mobile terminal using improved link estimations.

Consider **claim 16**, and **as applied to claim 15 above**, Rotstein teaches a method wherein estimating the link of said wireless terminal is based on said signal strength of said first signal and said signal strength measurement of said third signal (e.g., paragraphs 0017,0020 0029-0050, figure 4).

However, Rotstein does not specifically teach estimating the location of said wireless terminal.

In analogous art, Chen teaches estimating the location of said wireless terminal (abstract, col. 2 lines 14-25, col. 7 line 34-col. 8 line 35 and claims 1 and 12).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify Rotstein to include estimating the location of said wireless terminal for the purpose of estimating the location of a mobile terminal using improved link estimations.

Consider **claim 20**, Rotstein teaches a method of deducing a signal strength of a first signal at a wireless terminal based on the attenuation of a second signal, that is transmitted by said wireless terminal (e.g., paragraphs 0017,0020 0029-0050, figure 4).

However, Rotstein does not specifically teach estimating the location of said wireless terminal based on a signal strength of a first signal.

In analogous art, Chen teach estimating the location of said wireless terminal based on a signal strength of a first signal (abstract, col. 2 lines 14-25, col. 7 line 34-col. 8 line 35 and claims 1 and 12).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify Rotstein to include estimating the location of said wireless terminal based on said signal strength of said first signal for the purpose of estimating the location of a mobile terminal using improved link estimations.

Consider **claim 21,** and **as applied to claim 20 above,** Rotstein as modified by Chen teaches a method wherein deducing said signal strength of said first signal is also based on the transmitted strength of said first signal (e.g., paragraphs 0017,0020 0029-0050, figure 4).

Consider **claim 22,** and **as applied to claim 20 above,** Rotstein as modified by Chen teaches a method wherein deducing said signal strength of said first signal is also based on a signal-strength measurement for said second signal at the location where said first signal is transmitted (e.g., paragraphs 0017,0020 0029-0050, figure 4).

Consider **claim 23 and as applied to claim 20 above**, Rotstein as modified by Chen teaches a method of deducing a signal strength of a first signal at a wireless terminal based on the transmit strength of a second signal, that is transmitted by said wireless terminal (e.g., paragraphs 0017,0020 0029-0050, figure 4).

Consider **claim 25**, and **as applied to claim 20 above**, Rotstein teaches a method wherein estimating the link of said wireless terminal is also based on a signal strength measurement of a third signal (e.g., paragraphs 0017,0020 0029-0050, figure 4).

However, Rotstein does not specifically teach estimating the location of said wireless terminal.

In analogous art, Chen teaches estimating the location of said wireless terminal (abstract, col. 2 lines 14-25, col. 7 line 34-col. 8 line 35 and claims 1 and 12).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify Rotstein to include estimating the location of said wireless terminal for the purpose of estimating the location of a mobile terminal using improved link estimations.

Consider **claim 26**, and **as applied to claim 25 above**, Rotstein as modified by Chen teaches a method wherein estimating the location of said wireless terminal is based on said signal strength of said first signal and said signal strength measurement of said third signal (e.g., paragraphs 0017,0020 0029-0050, figure 4).

Claims **5,14,19 and 24** are rejected under 35 U.S.C. 103(a) as being unpatentable over Rotstein et al. US Patent Pub. No.: 2004/0057507, hereinafter, 'Rotstein', in view of Dupray (U.S. Patent No. 6,249,252).

Consider **claims 5, 14, and 24** and **as applied to claims 1,10 and 20 above,** Rotstein teaches the claimed invention except wherein estimating the location of said wireless terminal comprises pattern matching said signal strength of said first signal against a database that associates candidate locations for said wireless with predicted signal strength measurements for said first signal.

However, in analogous art, Dupray teaches wherein estimating the location of said wireless terminal **140** comprises pattern matching (**abstract**) said signal strength of said first

signal against a database that associates candidate locations for said wireless with predicted signal strength measurements for said first signal (**abstract, column 5 lines 50 –65, and column 51 line 50 – column 52 line 21**).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify Rotstein to include Dupray for the purpose of improving location determination.

Consider **claim 19,** and **as applied to claim 10 above,** Rotstein teaches the claimed invention except a method comprising removing the effects of fast fading.

However, in analogous art, Dupray teaches a method comprising removing the effects of fast fading (i.e., delay spread; random phase shift or Rayleigh Fading) (**column 2 line 56 – column 3 line 32 and column 26 lines 23-63**)

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify Rotstein to include Dupray for the purpose of improving location determination.

Claims 8,17,and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rotstein et al. US Patent Pub. No.: 2004/0057507, hereinafter, 'Rotstein', in view of Chen et al., hereinafter, Chen US Patent No. 6,658,258 B1 in view of Okanoue et al. (U.S. Pub. No. US 2003/0064733 A1.

Consider **claims 8,17, and 27** and **as applied to claims 6,15, and 25**. Rotstein teaches a method wherein estimating the link of said wireless terminal is based on a first signal and also based on a signal strength measurement of a third signal (e.g., paragraphs 0017,0020 0029-0050, figure 4).

However, Rotstein does not specifically teach estimating the location of said wireless terminal.

In analogous art, Chen teaches estimating the location of said wireless terminal (abstract, col. 2 lines 14-25, col. 7 line 34-col. 8 line 35 and claims 1 and 12).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify Rotstein to include estimating the location of said wireless terminal for the purpose of estimating the location of a mobile terminal using improved link estimations.

However, Rotstein as modified by Chen does not clearly disclose if indeed the location of said wireless terminal is based on the absolute magnitude of the difference between said signal strength of the first signal and said signal strength of the third signal.

In the same field of endeavor Okanoue et al. discloses a method of estimating the location of a mobile terminal 4 (figure 1) based on the absolute value of the difference between the reception level (i.e., signal strength) of multiple signals (**abstract, paragraph 0079, and figure 5**).

Therefore it would have been obvious to a person of ordinary skill in the art to calculate the absolute value of the difference between a first signal strength and a third signal strength as taught by Okanoue et al. in the method of Rotstein as modified by Chen in order to improve the mathematical derivations of signal strength.

Claims 9,18, and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rotstein et al. US Patent Pub. No.: 2004/0057507, hereinafter, 'Rotstein', in view of Dupray

(U.S. Patent No. 6,249,252) and further in view of Okanoue et al. (U.S. Pub. No. US 2003/0064733 A1.

Consider **claims 9,18, and 28** and **as applied to claims 6,15, and 25,** Rotstein teaches the claimed invention except wherein estimating the location of said wireless terminal comprises generating a two-dimensional probability distribution for the location of said wireless terminal.

However, in analogous art, Dupray teaches a method wherein estimating the location of said wireless terminal **140** comprises generating a two-dimensional probability distribution for the location of said wireless terminal (i.e., incorporating location estimates based on a joint PDF)(**column 54 lines 18-37**). Rotstein further discloses a method wherein estimating the link of said wireless terminal is based on a first signal and also based on a signal strength measurement of a third.

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify Rotstein to include Dupray for the purpose of improving location determination.

However, Rotstein as modified by Dupray does not teach if indeed the location of said wireless terminal is based on the generating a two-dimensional PDF for the location of said wireless terminal based on the absolute magnitude of the difference between said signal strength of the first signal and said signal strength of the third signal.

In the same field of endeavor Okanoue et al. discloses a method of estimating the location of a mobile terminal 4 (figure 1) based on the absolute value of the difference between the reception level (i.e., signal strength) of multiple signals (**abstract, paragraph 0079, and figure 5**).

Therefore it would have been obvious to a person of ordinary skill in the art to generate a two -dimensional PDF as taught by Rotstein as modified Dupray based on the absolute value of the difference between a first signal strength and a third signal strength as taught by Okanoue et al. to improve the mathematical derivations of signal strength.

Conclusion

3. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Charles Shedrick whose telephone number is (571)-272-8621. The examiner can normally be reached on Monday thru Friday 8:00AM-4:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kincaid Lester can be reached on (571)-272-7922. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Charles Shedrick
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October 1, 2007

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